INDEX TO VOLUME IX.

Illustrated articles are designated by an asterisk (*) and editorials by a dagger (†). Matter is indexed by subjects discussed rather than by titles of articles, but such titles are in quotation marks when given literally.

A

PAGE

Ætheric Disturbance, defined..... 98
"After the Battle." To H. H. B 83
Alternating-Current Measurements... 66
Alternating Currents, Fundamental Ideas of 62
*Alternators Running in Series..... 24
*American Institute of Electrical Engineers..... 69
*American Street Railway Association 68
Amortisseur, The Hutin and Leblanc 19
Analogies, Mechanical, Electrical and Hydraulic 62, 64
Apparent Power of Induction Motor. 35
*Arago's Disk..... 30
Artificial Lighting, Progress in..... 53

AUTHORS

Bates, Frank H., "Industrial Gas" 20, 38, 54, 86, 105
Bell, Louis, Ph. D., "Circumstances Limiting Transmission Distance"..... 57
Berg, Ernest J., "Compensating Line Drop by Synchronous Motors".. 41
Brooks, Orion, "Electrical Pioneers of San Francisco"..... 49
Carpenter, Hubert V., "Measuring Alternating-Current Frequency"..... 26
Doble, Robert McF., *The Mount Whitney Power Transmission.. 3
Frankenfeld, Budd, "Leakage from High-Voltage Lines"..... 95
Fry, Donald H., *"Resonance in Transmission Work"..... 61
Goldsborough, Prof. W. E., "Line Leakage and Charging Currents"..... 79
Gurney, J. Frank, "The Electrical Transmission to the Utica Mine"..... 77
Jackson, Prof. D. C., "Fundamental Ideas of Alternating Currents"..... 62
Lewes, Prof. Vivian B., "Water Gas and the Dellwik Process". 106
Low, Geo. P., "Concerning Electric Station Risks".. 40
Mershon, Ralph D., *"The Polyphase Induction Motor" 30
Meyer, E. D., "The Power in a Pound of Coal".....108
Moorehead, W., "Tangential Wheel Buckets in a Sand-Blast" 51
Perkins, Frank C., *"Stanley Installations in Canada"..... 96
Poole, Cecil P., *"Inductance Drop in Interior Wiring" 70
Preece, Sir Wm. Henry, K. C. B., "Relations Between Electricity and Engineering"..... 98
Stott, Henry G., "Parallel Operation of Direct-Coupled Alternators"..... 58
Thurston, Prof. R. H., "Mr. Westinghouse's Suggestion Discussed"..... 48
Van der Naillen, Albert, Sr., *"Two Mysteries of Wireless Telegraphy"..... 29

PAGE

Westinghouse, George, "The Power Situation in New York City"..... 47
*Automobile Batteries, Rotaries for Charging..... 82

B

Biddle's Bulletin.....110
*Branly, Prof. Edouard..... 29
*Brooks, Orion.....49, 51

C

California Electric Light Company .. 50
Calorimeter, The Junker, by Frank H. Bates.. .....20, 38
*Capacity Formulæ..... 25
Capacity Limiting Speed of Cable Telegraphy.. 99
Central Light and Power Co.....36, 57
Central Stations, Inefficiencies of Steam-Driven.... 102
*Chambly-Montreal Transmission.... 96
"Charging Currents, Line Leakage and"..... 79
Charging or Condenser Currents of Transmission Lines.....42, 43
"Coal, Power in a Pound of," by E. D. Meyer.....108
Coherer, Energy to Actuate a..... 67
Coherer, Marconi's 29
"Coefficients of Expansion".....109
†Combining Lighting and Railway Plants.....104
*"Compensating Line Drop by Synchronous Motors," by Ernest J. Berg..... 41
*Condenser Functions, Calculation of 25
Conductors, Expenditure of Energy in 99
Constituents of Water Gas.....106
Continuous Current, defined..... 62
"Copper Economy of Different Systems"..... 108
Cost of Steam, Oil Engine, and Electric Power 16
Current, Flow of..... 98
*Current, Line Effects of Leading and Lagging.. 43
Cycle, defined 64

D

†Dawn of the New Era..... 36
Dellwik-Fleischer System.....103, 106
Drop in Alternating-Current Lines... 41
Dust on Electric Light Wires.. . 86, 109
Dynamo, Principle of. 99

E

Edison Light and Power Co..... 36
Efficiency of Illuminants..... 53
Efficiency of Niagara Generators.... 27
Efficiency of Transmission Systems.. 96
Efficiency of Wireless Telegraphy, Electrical..... 67
"Electrical Pioneers of San Francisco," by Orion Brooks..... 49
"Electricity and Engineering, The Relations Between," by Sir Wm. H. Preece, K. C. B..... 98
Electricity in War.....101

PAGE

Electric Power, Diversified Uses of...101
*"Electric Power Transmissions of Southern California"..... 46
Electrolysis, defined..... 98
Electro-Metallurgy, World's Production by..... 99
*"Elevators, Electrical Engineering Company's Electric"..... 74
Energy of Telephone Currents 66
†Engineering Associations in the West 68
Engineering Data of the Mount Whitney Power Transmission..... 16
"Engineering, Relations Between Electricity and," by Sir Wm. H. Preece, K. C. B..... 98
Equitable Gas Light Co.....35, 36, 57
Excitation of Alternators..... 18
†Exhaust Steam, the Values Lost in..102
Expansion, Coefficients of 109

F

Fatalities, Comparative 99
Field, The Magnetic, defined..... 98
Frequencies, A Suggestion for Doubling..... 38
Frequencies, Prevailing. 98
Frequency, defined..... 63
Frequency Measurement, Stoeckhardt's Method of..... 26
Frequency, Measuring Alternating Current, by Hubert V. Carpenter 26
Fluorescence.. 53
*Forebay, A Divided..... 78
*"Fundamental Ideas of Alternating Currents," by Prof. Dugald C. Jackson..... 62
Fundamental Principles of Electricity 98

G

†"Gas-Driven Central Stations".....102
Gas Engines, Apportionment of Heat Lost in..... 103
Gas Engine Efficiency.....98, 103
"Gas and Power from City Refuse".. 47
Generators, Operation of Water Gas..106
Greene, Samuel Dana..... 27

H

*Hamilton, Ontario, Transmission... 97
Harmonics—see Frequency.....
Heat Units, Table for Conversion of.. 39
†Heating From Central Stations.....103
Hell Gate, The Removal of.....107
High Voltages, Extreme..... 79
High-Voltage Limitations..... 57

I

Illuminants, Efficiency of..... 53
†"Illumination by Incandescence".. 53
Incandescent Lamp, Theory of the... 53
Independent Electric Light and Power Company 37
*"Inductance Drop in Interior Wiring," by Cecil P. Poole..... 70
*Inductance Formulæ..... ....25, 56
Induction Motor, Advantages of the.. 44
Induction Motors as Generators..... 19
Induction Motor, Characteristics of a Constant-Speed.....33, 44

PAGE

Induction Motors, Exciting Current for.... 19
Induction Motor Considered as a Transformer.... 34
Induction Motors, Noteworthy Installations of.... 79
*"Induction Motors, Polyphase," by Ralph D. Mershon.... 30
Induction Motors, Variable-Speed ... 35
*Induction Potential Regulators, General Electric Types of.... 80
Inductive Resistance.... 66
*"Industrial Gas," by Frank H. Bates 20, 38, 54, 86, 105
†Insulation Resistance Tests, Fallacies of.... 84
†Interior Wiring, Simplification of... 84
Interlocking Signal Devices.... 100
†Isolated Plants, Great Economy of..102

J

Jet Characteristics Under High Heads 11
Joule, Principle of the Unit.... 99
*Jungfrau Locomotive, Connections of the.... 67
*Junker Calorimeter, by Frank H. Bates.... 20, 38

L

*Lacey Auto-controller.... 44
Lag, Angle of.... 66
Laws of Alternating Currents, Fundamental.... 65
Leakage, Approximate Law of Line.. 80
"Leakage from High-Voltage Lines," by Budd Frankenfeld.... 95
Lenz's Law.... 31
Light, Identity of Electricity and.... 98
"Line Leakage and Charging Currents," by Prof. W. E. Goldsborough.... 79
Lines of Force, defined.... 98
Lines, Relative Advantages of One, Two and Three Phase, by Budd Frankenfeld.... 95
LITERATURE
"American Telephone Practice" by Kempster B. Miller, M. E.. 27
"California Mines and Minerals," by the California Miners' Association.... 28
"Electric Power Transmission," by Louis Bell, Ph. D.... 109
Engineering Times, The.... 73
Power Transmitted by Electricity, by Philip Atkinson, A. M., Ph. D.... 73
*Lundberg, William.... 70

M

Magnetism, defined.... 98
†"Man's and Nature's Handiwork".. 85
Martin & Co., Jno.... 110
"Microscopic Values of Electrical Energy".... 66, 85
*Montmorency-Quebec Transmission.... 96, 97
*Mount Tamalpais, Topography of.. 93
†Mount Whitney Plant, The.... 18
†"Municipal Pole Lines for San Francisco".... 52
Mutual Electric Light Company.. 36, 57

N

†National Electric Light Association. 68
Nernst Filament Lamp, A.... 40

O

PAGE

Ohm's Law, defined.... 65
*Oxygen Calorimeter, by Frank H. Bates.... 54, 86, 109

P

†Pacific Coast Electric Transmission Association.... 68, 69, 93, 95
Pacific Gas Improvement Company of San Francisco.... 36, 57
Pacific Power Company.... 36
"Parallel Operation of Direct-Coupled Alternators," by Henry G. Stott.. 58
Peninsula Electric Lighting Co.... 28
Periodicity, defined.... 63
Personals.... 17, 23, 50, 72, 109
Phosphorescence.... 53
Pipe Line, Data of the Mount Whitney 9
Polyphase Systems, The Copper Economy of.... 108
†Polyphase Traction in a Nutshell... 69
*Polyphase Traction, The Jungfrau Application of.... 67
Power Factor, defined.... 66
Power Factor of Induction Motors... 35
"Power Situation in New York City," by George Westinghouse.... 47
Price for Power from Mount Whitney Transmission.... 15
Pulsating Currents, defined.... 63
*Pumping Service, Synchronous Motors in.... 97

R

Radio-conductor, Branly's.... 29
Railways, British Electric.... 101
Rainfall, Energy Necessary to Cause. 86
Ratio of Transformation, defined.... 100
*Reactance, Line Effects of.... 42, 43
Redlands Electric Light and Power Company.... 47
*Regulation, Water-Wheel.... 92
Retardation, defined.... 65
Resistance, Inductive.... 66
Resonance, Conditions for Occurrence of.... 25, 26
Resonance, Electrical.... 23
*"Resonance in Transmission Work," by Donald H. Fry.... 61
Rotary Converters, Some Large.... 38
*"Rotaries for Charging Automobile Batteries".... 82
*Rowe, Norman.... 72

S

San Antonio Light and Power Co.... 46
San Francisco Gas and Electric Co..36, 56
San Francisco Light and Power Co... 28
"San Francisco's Gas and Electrical Business".... 56
San Gabriel Electric Co.... 47
Sanitation, Electricity in.... 108
Santa Monica Electric Light Co.... 46
*Scott Phase Transformation Explained.... 24
*Scribner, Herbert D.... 17
*Series Operation of Alternators.... 24
Shop Driving, Systems of Electric.59, 101
Slip in Induction Motors.... 33
Southern California Power Company. 46
Speed of Induction Motors.... 34
*St. Cunegonde-Quebec Transmission. 97
Standard Electric Company of California.... 37

PAGE

*"Stanley Installations in Canada," by Frank C. Perkins.... 96
"Station Risks, Concerning Electric," by Geo. P. Low.... 40
Steam Engine Efficiency.... 98
Storage Traction Fails in Chicago....104
†Synchronizing Test, A Remarkable.. 18
*"Synchronous Motors for Compensating Line Drop" by E. J. Berg. 41
Synchronous Motor, Relation of Leading and Lagging Current Taken by 43

T

*Tamalpais Scenic Railway.... 94
*"Tangential Wheel Buckets in a Sand-Blast," by W. Moorehead.. 51
Technical Society of the Pacific Coast 69
Telegraphy, Universal Use of.... 99
Telephone Receiver, Amplitude of Vibration in Diaphragm of the.... 85
Telephony an Electrical Transmission System.... 85
Three-phase Lines, Bell's Stock Formula for.... 110
Three-wire System, The Paderno 500-volt Incandescent Lighting.... 27
Trade Literature.... 28, 60, 74, 110
Transformers, Connections of Westinghouse Step-up.... 13
*Transformers, Principles of the Scott Phase.... 24
Transformers, Switching in Spare..13, 78
Transformers, Tying-in.... 46
Transmission, Circumstances Limiting the Distance of, by Louis Bell, Ph. D.... 57
*Transmission, Mount Whitney, by Robert McF. Doble.... 3
Transmission, Principles of.... 100
Transmission, Telephony an Electrical 85
Transmission, San Antonio-Pomona.. 46
Transmission, Southern California... 46
*Transmission, Utica-Angels.... 77
Transmitter, Energy of the Telephone 66
*Tutthill Water Wheels and Governors 87
*Two to Three Phase Transformation 24
*Tying-in Transformers of Different Ratios.... 46

U

"Utica Mine, Electrical Transmission to the," by J. Frank Gurney.... 77

V

Variable-Speed Induction Motors.... 35

W

Wagner Electric Manufacturing Company, Annual Meeting of.... 28
"Water Gas and the Dellwik Process," by Prof. Vivian B. Lewes.... 106
Water Gas, Chemical Reactions in Making.... 104
Water Gas, defined.... 106
Water-Wheel Regulation.... 92
Wattmeters for Alternating-Current Circuits.... 66
Wave Forms, Alternating-Current... 64
Wires, Dust on Electric Light.... 86
*Wiring, Inductance Drop in.... 70
Western Light and Power Company.. 36
"Westinghouse's Suggestion Discussed," by Prof. R. H. Thurston.. 48
*"Wireless Telegraphy, Two Mysteries of," by A. Van der Naillen, Sr. 29
Wood Preservation.... 110